APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,160	12/03/2001	Shigeo Orii	1538.1020	6156

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EXAMINER
MITCHELL, JASON D

ART UNIT	PAPER NUMBER
2124	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/998,160	ORII, SHIGEO
	Examiner	**Art Unit**	
	Jason Mitchell	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 December 2001</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-30</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-30</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>03 December 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☒ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   Paper No(s)/Mail Date. _____.
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)   5)☐ Notice of Informal Patent Application (PTO-152)
    Paper No(s)/Mail Date <u>12/3/01</u>.   6)☐ Other: _____.

DETAILED ACTION

1.   This application claims priority to JP 2001-241121 filed on 08/08/2001. For

priority to be perfected a certified English translation must be provided.

2.   Claims 1-30 are pending in this case.

Claim Objections

3.   **Claims 6, 16 and 26 are objected to because of the following**

informalities: The equation limiting the last calculating step contains unmatched

parentheses. A similar calculation is disclosed in the specification (pg. 4, lines 1-

2), this equation does not contain the unmatched parentheses from the claim and

will be used in its place. Appropriate correction is required.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent
> therefor, subject to the conditions and requirements of this title.

Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention

is directed to non-statutory subject matter. The claims recite a method of

calculating a parallel efficiency, comprising the steps of obtaining information

regarding processing times, calculating various rates and ratios, and then using

the results of these calculations to produce a parallel efficiency, but fail to recite

embodiment in a computer readable medium, and thus only represent an

abstract idea, without practical application in the technological arts. Therefore the claims only recite non-statutory subject matter.

Claims 11-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims recite a program embodied on a medium for causing a computer to calculate a parallel efficiency, comprising the steps of obtaining information regarding processing times, calculating various rates and ratios, and then using the results of these calculations to produce a parallel efficiency. A program embodied on a medium does not constitute technological embodiment, as the medium recited is not specifically computer readable (e.g. it could be a piece of paper), therefore the claims only recite non-statutory subject matter.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   **Claims 1-30 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,308,316 to Hashimoto et al. (Hashimoto).**

Regarding Claims 1, 11 and 21: Hashimoto discloses obtaining first information

concerning a processing time for a portion to be sequentially processed during

an execution of a parallel processing program (col. 9, lines 14-15 'execution

period ... Cs ... where no parallel processing is possible'), second information

concerning a processing time for a portion to be parallel processed during the

execution of said parallel processing program (col. 9, lines 12-14 'execution

period ... Cp ... where the parallel processing is possible) and third information

concerning a processing time caused by an overhead for parallel processing (col.

8, lines 36-38 'The load balance ... influences execution performance');

calculating a parallelized rate (col. 9, line 36 'The parallelization ratio P'), a

sequential calculation time ratio (col. 9, lines 41-46 'parallel-to-serial speed ratio')

and a parallel overhead ratio (col. 8, lines 48-52) by using said first information

said second information and said third information; and calculating a parallel

efficiency by using said parallelized rate, said sequential calculation time ratio

and said parallel overhead ratio (Fig. 14A, Parallel Speed Up).

Regarding Claims 2, 12 and 22: The rejection of claims 1, 11 and 21 are

incorporated respectively; further, Hashimoto discloses said first information

concerning the processing time for the portion to be sequentially processed is a

number of times it is determined in a confirmation of execution status for each

predetermined period during execution of said parallel processing program (col.

3, lines 16-17 'examines the executing state of the program 6 by use of

interrupts'), that sequential processing is performed (col. 9, lines 14-15 'execution

period ... Cs ... where no parallel processing is possible'), and said second

information concerning the processing time for the portion to be parallel

processed is a number of times it is determined in the confirmation of the

execution status for each predetermined period during the execution of said

parallel processing program (col. 3, lines 16-17), that parallel processing is

performed (col. 9, lines 12-14 'execution period ... Cp ... where the parallel

processing is possible), and said third information concerning the processing

time caused by the overhead for the parallel processing is a number of times it is

determined the confirmation of the execution status for each predetermined

period during the execution of said parallel processing program (col. 3, lines 16-

17), that processing caused by the overhead for the parallel processing is

performed (col. 8, lines 36-38 'The load balance ... influences execution

performance').

Regarding Claims 3, 13 and 23: The rejection of claim s1, 11 and 21 are

incorporated respectively; further in col. 7, line 48, Hashimoto discloses

multiplying a value of said second information by the number of processors to

obtain fourth information concerning a processing time in sequential processing

for the portion to be parallel processed during the execution of said parallel

processing program (col. 7, lines 46-58 '(c+d+e+f+g+h+i)'); and calculating (a

value of said fourth information)/(a value of said first information + a value of said

fourth information) as said parallelized rate (col. 7, lines 46-58

'P=(c+d+e+f+g+h+i)/(a+b+c+d+e+f+g+h+I+j+k+I)').

Regarding Claims 4, 14 and 24: The rejection of claims 1, 11 and 21 are

incorporated respectively; further Hashimoto discloses said first calculating step

comprises a step of dividing a value of said first information by a value of information concerning total processing time for said parallel processing program to obtain said sequential calculation time ratio (col. 9, line 45).

Regarding Claims 5, 15 and 25: The rejection of claims 1, 11 and 21 are incorporated respectively; further Hashimoto discloses said first calculating step comprises a step of dividing a value of said third information by a value of information concerning total processing time for said parallel processing program to obtain said parallel overhead ratio (col. 9, line 50).

Regarding Claim 6: The rejection of claims 1, 11 and 21 are incorporated respectively; further Hashimoto discloses said second calculating step comprises a step of calculating 1/(said parallelized rate) x (1-said sequential calculation time ratio-said parallel overhead ratio) as said parallel efficiency (Fig. 14A, Parallel Speed Up).

Regarding Claims 7, 17 and 27: The rejection of claims 1, 11 and 21 are incorporated respectively; further Hashimoto discloses a step of outputting said parallelized rate, said sequential calculation time ratio, said parallel overhead ratio and said parallel efficiency (col. 9, lines 52-53 'outputs provided by the apparatus').

Regarding Claims 8, 18, and 28: The rejection of claims 1, 11 and 21 are incorporated respectively; further Hashimoto discloses a step of analyzing contribution of said parallelized rate, said sequential calculation time ratio, and parallel overhead ratio toward said parallel efficiency (col. 9, lines 54-55 'The analysis outputs of the apparatus').

Regarding Claims 9, 19 and 29: Hashimoto discloses obtaining first information

concerning a processing time for a portion to be sequentially processed during

an execution of a parallel processing program (col. 9, lines 14-15 'execution

period ... Cs ... where no parallel processing is possible'), second information

concerning a processing time for a portion to be parallel processed during the

execution of said parallel processing program (col. 9, lines 12-14 'execution

period ... Cp ... where the parallel processing is possible) and third information

concerning total processing time for said parallel processing program (col. 9,

lines 15-16 'Ca=Cp + Cs'); multiplying a value of the obtained second information

by a number of processors as fourth information (col. 7, lines 46-58

'(c+d+e+f+g+h+i)') concerning a processing time in sequential processing for the

portion to be parallel processed during the execution of said parallel processing

program; and calculating a parallelized rate (col. 9, line 36 'The parallelization

ratio P'), a sequential calculation time ratio (col. 9, lines 41-46 'parallel-to-serial

speed ratio') and a parallel overhead ratio (col. 8, lines 48-52) by using at least

said first information and said second information; and calculating ((a value of

said first information) + (a value of said fourth information / a value of said third

information) x (said number of processors) as a parallel efficiency (Fig. 14A,

Parallel Speed Up). .

Regarding Claims 10, 20 and 30: Hashimoto discloses obtaining first

information concerning a processing time for a portion to be sequentially

processed during an execution of a parallel processing program (col. 9, lines 14-

15 'execution period ... Cs ... where no parallel processing is possible'), second

information concerning a processing time for a portion to be parallel processed

during the execution of said parallel processing program (col. 9, lines 12-14

'execution period ... Cp ... where the parallel processing is possible) and third

information concerning total processing time for said parallel processing program

(col. 9, lines 15-16 'Ca=Cp + Cs'); calculating a parallelized rate by using the

obtained first information and the obtained second information (col. 9, line 36

'The parallelization ratio P'); and calculating a product of an inverse of said

parallelized rate, an inverse of a value of said third information and said second

information as a parallel efficiency (Fig. 14A, Parallel Speed Up).

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. US 5,151,991 to Iwasawa et al.; US 5,245,638 to

Gustafson; 5,684,947 to Horie; US 6,292,885 to Nakai et al.; 'Parallelism in

Algebraic Computation and Parallel Algorithms for Symbolic Linear Systems' by

Sasaki et al.; 'The Computational Speed of Supercomputers' by Bucher; 'How

Are We Doing? An Efficiency Measure for Shared, Heterogeneous Systems' by

'Chamberlain et al.

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Jason Mitchell whose telephone number is

(571) 272-3728. The examiner can normally be reached on Monday-Thursday

and alternate Fridays 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Kakali Chaki can be reached on (571) 272-3719. The fax

phone number for the organization where this application or proceeding is

assigned is 703-872-9306.

Information regarding the status of an application may be obtained from

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direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free).

Jason Mitchell
1/7/5

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